

**Preliminary Assessment
of
Peak Flow Storage Capacities
at
Selected Surface-Water Withdrawal
Points**

**Prepared by the
Maine Geological Survey, Department of Conservation
for the
Maine Department of Environmental Protection**

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Revised**

Introduction:

This report evaluates the volume of water available for withdrawal into storage during the spring runoff period at six selected potential agricultural surface water withdrawal points, and compares it to proposed storage pond capacities obtained from water management plans submitted to the Department of Agriculture, Food and Rural Resources.

Methodology:

Proposed storage pond capacities and surface water withdrawal points for six growers were obtained from water management plans submitted to the Department of Agriculture, Food and Rural Resources. These six growers are the same six growers used in the report **Preliminary Assessment of Water Withdrawal Thresholds at Selected Surface-Water Withdrawal Points** prepared for the Department of Environmental Protection (DEP) in September, 2004.

The spring seasonal withdrawal threshold proposed in the internal working document prepared by the DEP in October 2004 were estimated for the six withdrawal points using the USGS regression equations for monthly median flow in Dudley, 2003. The proposed spring seasonal withdrawal threshold is the estimated April median flow, and applies to the period March 16 to May 15.

Daily flows at the six withdrawal points were estimated from measured flows at a nearby USGS gaging station by applying a drainage basin area ratio factor, i.e.,

$$Q_{\text{withdrawal point}} = Q_{\text{USGS gage}} * (A_{\text{withdrawal point}})/(A_{\text{USGS gage}})$$

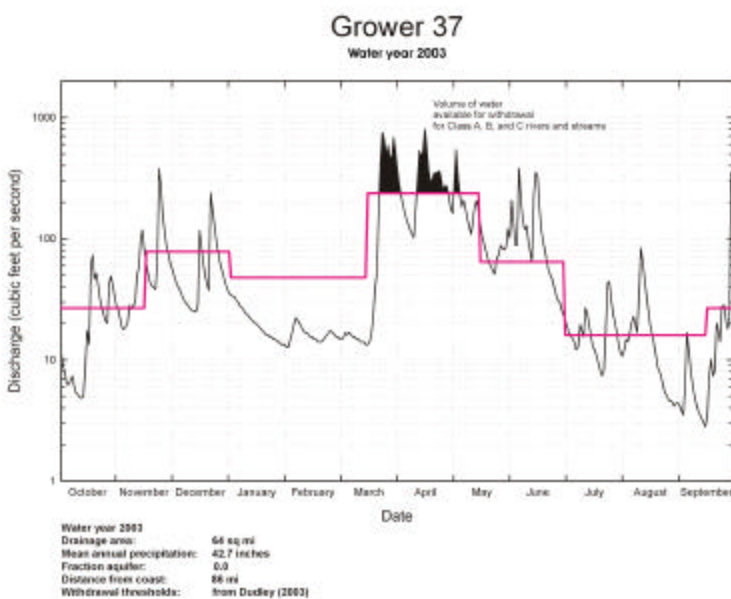
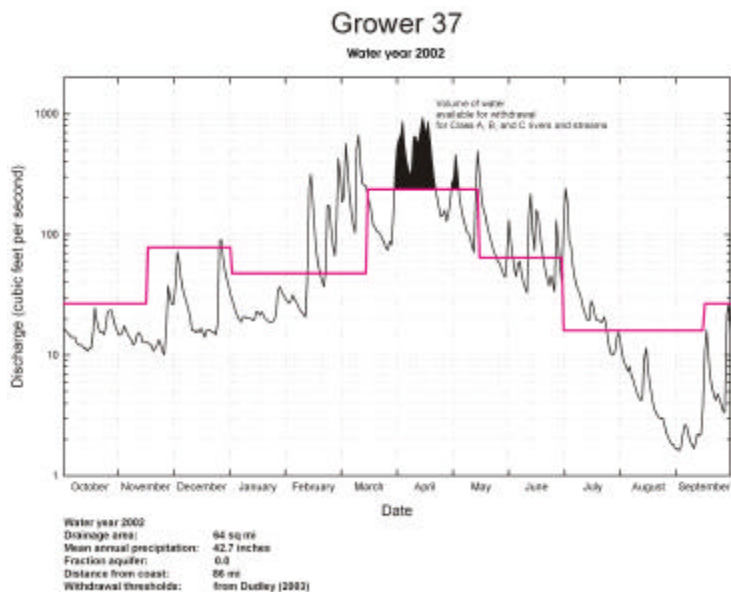
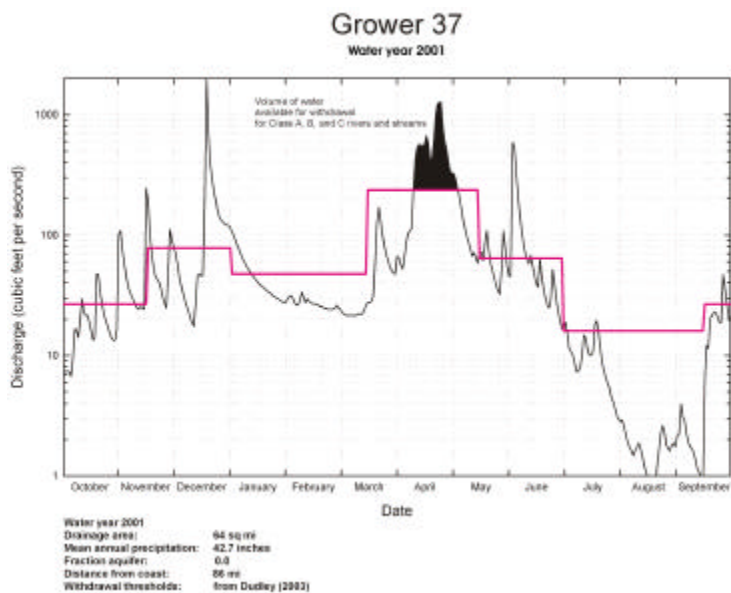
Where Q is flow and A is drainage basin area above the withdrawal point or gaging station.

A small computer program was written to compare the estimated flow at the withdrawal point to the proposed spring seasonal withdrawal threshold.

In the case of class A, B, and C rivers and streams, where it is proposed that the entire excess flow above the proposed season threshold is available for withdrawal, if the estimated flow was above the threshold, the excess flow was added to a running total of excess flow. The total excess flow for the period March 16 to May 15 was then compared to the proposed storage pond capacity from the water management plan.

For class AA streams, it is proposed that only 10-percent of the excess flow above the proposed spring (March 16 to May 15) seasonal withdrawal threshold is available for withdrawal.

The figures on the next page graphically illustrate the volume of water available for withdrawal into storage during the spring runoff for Grower 37 (Piscataquis County) for water years 2001, 2002, and 2003.



Results:

The table below lists the six growers used in this assessment, their proposed storage pond capacities, and the excess stream flow volume above the proposed spring seasonal withdrawal threshold for water years 2001, 2002, and 2003.

Spring – March 16 to May 15					
Grower	Drainage basin area (sq mi)	Proposed storage pond capacity (cfs)	Water year	Total excess flow (cfs)	
				Class A, B, C	Class AA
Grower 13	2.84	1.74x10 ⁶	2001	30.1x10 ⁶	3.01x10 ⁶
			2002	30.6x10 ⁶	3.06x10 ⁶
			2003	43.5x10 ⁶	4.35x10 ⁶
Grower 37	64	1.20x10 ⁶	2001	772x10 ⁶	77.2x10 ⁶
			2002	719x10 ⁶	71.9x10 ⁶
			2003	548x10 ⁶	54.8x10 ⁶
Grower 43	11	1.24x10 ⁶	2001	133x10 ⁶	13.3x10 ⁶
			2002	124x10 ⁶	21.5x10 ⁶
			2003	95.1x10 ⁶	9.51x10 ⁶
Grower 50	0.93	0.261x10 ⁶	2001	3.74x10 ⁶	0.37x10 ⁶
			2002	4.55x10 ⁶	0.46x10 ⁶
			2003	5.62x10 ⁶	0.56x10 ⁶
Grower 58-1	1.75	0.216x10 ⁶	2001	25.3x10 ⁶	2.53x10 ⁶
			2002	5.59x10 ⁶	0.56x10 ⁶
			2003	16.5x10 ⁶	1.65x10 ⁶
Grower 62	4.13	0.448x10 ⁶	2001	59.4x10 ⁶	5.94x10 ⁶
			2002	13.0x10 ⁶	1.30x10 ⁶
			2003	38.4x10 ⁶	3.84x10 ⁶

In all cases, even for the 0.93 sq mi basin for Grower 50, there is a large surplus of available water for withdrawal and storage during the spring runoff period. The worst case is for Grower 50 if located on a Class AA stream. In this case, there is less than 2 times the needed water available for withdrawal.

Summary:

In all cases it appears that the proposed spring season withdrawal threshold – the April median flow applied during the period March 16 to May 15 – provided for more than adequate water for withdrawal and storage in a pond for later use.